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ABSTRACT

This report reviews research on early childhood education and provides an annotated bibliography of key references. Sections focus on research on effective schooling, early childhood education, differential effects of program models and teaching practices, and congruence between the early childhood education research and the effective schooling research. Reviews of research on effects of preschool are arranged according to the categories of long- and short-term benefits and effects on different student populations. A total of 28 key references and 20 additional references are cited. (RH)

THE Northwest Regional Educational Laboratory

PROGRAM REPORT

RESEARCH ON EARLY CHILDHOOD EDUCATION

Topical Synthesis #3
School Improvement Research Series

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January 1989

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School Improvement Research Series

Topical Synthesis #3

Research on Early Childhood Education

Kathleen Cotton and Nancy Faires Conklin

Introduction

Education in the second half of the twentieth century has been characterized by increases in the provision of educational programs for preschool-age children. The largest wave of preschool education activity has been the federally funded Head Start program, established in the 1960s to help children overcome the cognitive, social, emotional, and physical deficits that frequently accompany growing up in economically deprived homes. By providing an array of educational and social services to children and their families, Head Start programs are designed to foster general well-being and enhance school readiness, so that these children might gain the full benefit of their school experiences and be more successful in life generally.

If Head Start and other programs for economically disadvantaged children can be shown to make a positive difference in these children's school and life experiences, their impact can be very widespread. Schweinhart (1985) points out that one-fourth of all children under the age of six are living in poverty, and that three-fifths of the mothers of three- and four-year-old children now work outside the home. However, fewer than 20 percent of the nation's three- and four-year-olds from poor families are currently enrolled in Head Start programs.

Kindergarten enrollment has also increased dramatically in recent years. While only seven states mandate kindergarten attendance, about 95 percent of all children currently attend kindergarten (Sava 1987), and 23 percent of these attend full-day programs (Karweit 1988).

In addition to the generally recognized need to provide some kind of extra support to children from low-income homes, there is another reason for the dramatic increase in educational programs for children before first grade. This is the increase, alluded to above, of mothers in the workforce. Many parents who are not at home with their children in the daytime are not satisfied with unstructured day care or babysitting, preferring that their children participate in more formal learning experiences.

Finally, some of the increased interest in and push for structured preschool programs comes from the unfortunate notion, held by some, that education is a race to be won, and those who start first are more likely to finish ahead. Commenting on this source of pressure for preschool education, Elkind (1988) says:

> ...the choice of the phrase "Head Start" was unfortunate. "Head Start" does imply a race. And not surprisingly, when middle income parents heard that low-income children were being given a "Head Start," they wanted a similar "Head Start" for their children. (p. 23)

A great many educators and researchers view early childhood education as beneficial to children's cognitive and social development. These proponents--including virtually all of

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the researchers and theorists whose work was consulted in order to prepare this document--base their conviction on personal observation and on the many research studies linking early childhood programs to desirable outcomes. These outcomes will be described in detail in a later section of this report.

It is important to note, however, that some educators, such as Elkind (1988), Katz (1987), Zigler (1986), and representatives of the National Association for the Education of Young Children (1986) warn against too much formal, highly structured education for very young children. These and other writers have called attention to three major objections to school-based programs. As summarized by Katz, these objections include:

- Such programs, because they are to be conducted in schools normally serving elementary-age children, will inevitably adopt formal academic teaching methods that early childhood specialists generally consider developmentally inappropriate for under-six-year-olds.

- Research reporting positive long-term benefits of early education programs is based on the kind of high quality of staff and program implementation unlikely to be duplicated in most school districts.

- Others...cite the special risks of public school programs for young black children, suggesting that such children need comprehensive programs that include health, nutrition, social services, and parent involvement, as well as informal curriculum/methods. (p.2)

In addition, writers such as Herman (1984) and Puleo (1988) call attention to the issues surrounding the half-day/full-day kindergarten controversy. They note that some educators and researchers feel that the additional hours are too fatiguing for young children and that, in any case, increasing allocated time does not necessarily enhance program quality.

Given this array of assertions and reservations about preschool and kindergarten programs, it is important to examine what well-designed research studies reveal about the long- and short-term effects of early childhood education.

It is also important to determine whether different effects are produced by different models for early childhood programs--to determine, for example, whether didactic, teacher-directed programs or less-structured, "discovery" models produce superior cognitive and behavioral outcomes. Finally, we need to determine whether different populations of students respond differently to early childhood education in general or to particular program models.

The Effective Schooling Research

The relationship of the early childhood education research to the general effective schooling research is also of interest to teachers, administrators, theorists, and researchers. The effective schooling research base developed over the past two decades tells us a great deal about what school and classroom practices are effective for students in general.

The series of topical synthesis documents of which this report is a part examines particular topic areas against the backdrop of the general effective schooling research to determine points of congruence and identify any areas where the general and specific bodies of research do not match.

To achieve this, the present report invokes the general effective schooling research cited in *Effective Schooling Practices: A Research Synthesis* (Northwest Regional Educatonal Laboratory 1984). In reviewing the many research findings cited in this document, it is important to remember that they did not, for the most part, emerge from studies conducted with children younger that first graders. Many of these studies are therefore not applicable to these very young children, because the settings and treatments employed in them represent what Katz described above as "formal academic teaching methods that early childhood specialists generally consider developmentally inappropriate for under-six-year-olds." (1987, p. 2)

There are, nevertheless, several points of congruence between the two literatures, and these will be noted following a discussion of the research on early childhood education.

The Early Childhood Education Research

We are concerned here with research conducted with children three, four, and five years old--the ages which are the focus of most preschool and kindergarten programs. Thus, programs and treatments conducted with infants and toddlers are excluded from the analysis, as are those custodial care arrangements not intended to promote children's general development or foster familiarity with academic activities. In addition, we need to point out that the focus here is the *general* early childhood education research; we have not conducted a detailed analysis of the research on special programs for handicapped children.

Twenty-eight research documents were reviewed in preparation for this report. Eighteen were studies, eight were reviews, and two reported the results of both a study and a review effort. Seventeen reported the results of research conducted with preschool children, six concerned research with kindergarteners, two reported on research with both groups, and three had to do with research with these plus either younger or older children. Many of the studies had a longitudinal design, and the majority of the studies and reviews were concerned with economically disadvantaged, urban, largely black populations.

About half the studies and reviews looked at the effects of preschool or kindergarten in general on the cognitive and affective development of participants. The rest were concerned with specific components within the context of preschool or kindergarten, such as the effects of parent involvement in early childhood programs and the differential effects of curriculum models. Many outcome areas were examined, particularly the effects of early childhood programs on IQ, achievement, incidence of grade retentions, and incidence of referrals for remedial or special education.

The Effects of Preschool

The early studies and evaluations of Head Start programs produced a finding that educators and researchers of the 1960s and 1970s found disheartening: that while impressive cognitive gains result from preschool participation, these gains level off and, in most cases, completely "wash out" by the end of second grade. That is, before the end of the primary grades, there are no longer any IQ or achievement differences between children who had attended preschool programs and demographically similar children who had not.

Many writers, however, have pointed out that this convergence of scores for preschool participants and nonparticipants is to be expected. "We simply cannot," notes Zigler (1986), "inoculate children in one year of preschool against the ravages of a life of deprivation." Thus, the federally funded Follow Through program for primary children was developed to help them maintain and increase the gains they had made as preschoolers.

Meanwhile, other research was being conducted regarding Head Start and other preschool programs, and attention began to shift from the limited focus on the IQ scores of preschool "graduates" to other cognitive measures and, particularly, to noncognitive outcomes, both short-term and long-term.

Short-term Benefits

Research has established a variety of short-term benefits associated with disadvantaged children's preschool attendance. As noted above, IQ and achievement scores increase dramatically (Berrueta-Clement, et al. 1985; Consortium for Longitudinal Studies 1983; Illinois State Board of Education 1985; Irvine 1982; Miller and Dyer 1975; Schweinhart 1985; Bronson, et al. 1985). In addition, Bronson, et al. found preschool graduates to exhibit better task completion and more cooperative interaction with peers.

Of the various curriculum models used in preschool programs, the greatest short-term benefits are obtained when children participate in so-called "didactic" programs--programs which have a pre-academic focus, in which the teacher selects and directs the majority of the classroom activities, and in which there is a high degree of structure (McKey, et al. 1985; Powell 1986; Schweinhart, et al. 1986; Huston-Stein, et al. 1977).

Long-term Benefits

After the first wave of research which cast doubt on the long-term value of preschool programs for economically disadvantaged children, researchers and early childhood specialists began to question the wisdom of using only cognitive measures--and particularly IQ scores--as the indicator of program success. The 1985 Illinois State Board of Education review states that:

> ...growing reservations about the validity and limitations of using IQ as predictor and sole indicator of academic achievement led to the inclusion of scholastic achievement, scholastic placement, noncognitive development, and social responsibility as other indications of effectiveness. (p. 16)

Many researchers have found that, like IQ differences, the majority of achievement differences between preschool participants and nonparticipants disappear by the middle of the primary years. Other researchers and reviewers, however, such as Lazar and Darlington (1982), Gray, et al. (1982) and the Illinois State Board of Education (1985) report that cognitive gains did persist beyond the primary years among the disadvantaged student populations with which they were concerned.

It is in the noncognitive realm, however, that the greatest benefits of preschool experience occur. Longitudinal studies, some of which have followed preschool graduates all the way into adulthood, have identified many positive and significant relationships between preschool participation and task-related, social, and attitudinal outcomes. According to the researchers and reviewers whose work was consulted in preparation for this report, preschool graduates outshine nonparticipants in the following areas:

- **Fewer referrals for remedial classes or special education.** Preschool graduates were more likely to remain in regular classes throughout their public school years (Berrueta-Clement, et al. 1985; Consortium for Longitudinal Studies 1983; Featherstone 1986; Gray, et al. 1982; Illinois State Board of Education 1985; Irvine 1982; Lazar and Darlington 1982; Schweinhart 1985; Stallings and Stipek 1986; Powell 1986).

- **Fewer retentions.** Preschool graduates were less likely to repeat grades (Berrueta-Clement, et al. 1985; Consortium for Longitudinal Studies 1983; Gray, et al. 1982; Illinois State Board of Education 1985; Irvine 1982; Lazar and Darlington 1982; Schweinhart 1985; Stallings and Stipek 1986; Powell 1986).

- **Higher grades.** Graduates had fewer failing grades throughout their school years (Berrueta-Clement, et al. 1985; Consortium for Longitudinal Studies 1983; Featherstone 1986; Illinois State Board of Education 1985; Schweinhart 1985).

- **Greater social and emotional maturity.** Those who attended preschool received higher teacher ratings on measures of social and emotional maturity (Berrueta-Clement, et al. 1985; Illinois State Board of Education 1985; Irvine 1982).

- **More frequent high school graduation/GED completion.** Preschool graduates completed high school in greater numbers (Berrueta-Clement, et al. 1985; Consortium for Longitudinal Studies 1983; Featherstone 1986; Illinois State Board of Education 1985; Schweinhart 1985).

- **Greater academic motivation, on-task behavior, capacity for independent work, and time spent on homework.** Preschool participants were rated higher than nonparticipants on these measures (Bronson, et al. 1985; Illinois State Board of Education 1985; Irvine 1982; Lazar and Darlington 1982; Schweinhart 1985; Stallings and Stipek 1986; Consortium for Longitudinal Studies; Berrueta-Clement, et al. 1985; Miller and Dyer 1975).

- **Lower incidence of absenteeism/detentions.** Graduates had lower incidences of absenteeism and detentions (Illinois State Board of Education 1985).

- **Better attitudes toward school.** Preschool graduates had much higher scores on measures of attitude toward school and

toward particular subject areas (Berrueta-Clement, et al. 1985; Consortium for Longitudinal Studies 1983; Lazar and Darlington 1982; Miller and Dyer 1975).

- **Better self-esteem, greater internal locus of control.** Those who attended preschool had higher scores on self-esteem and locus of control measures than did those who did not attend preschool (Berrueta-Clement, et al. 1985; Consortium for Longitudinal Studies; Illinois State Board of Education 1985).

- **Lower incidence of illegitimate pregnancy, drug abuse, and delinquent acts.** Older students who had attended preschool as small children had lower incidences of these behaviors, according to self-reports (Featherstone 1986; Stallings and Stipek 1986; Consortium for Longitudinal Studies 1983; Berrueta-Clement 1985; Powell 1986; Schweinhart, et al. 1986; Gersten 1986).

- **More sports participation.** Preschool graduates were more likely to engage in school-sponsored sports (Powell 1986; Gray, et al. 1982).

- **Higher future aspirations, more postsecondary education.** Preschool graduates had higher aspirations for their futures than nonparticipants and were more likely to enroll in postsecondary programs (Featherstone 1986; Consortium for Longitudinal Studies; Berrueta-Clement, et al. 1985; Schweinhart 1985; Lazar and Darlington; Stallings and Stipek 1986).

Once out of school, young people who had attended preschool continued to make a better showing in life than those who had not. They were found to have:

- **Higher employment rates and better earnings and, correspondingly, a lower incidence of dependence on welfare** (Berrueta-Clement, et al. 1985; Consortium for Longitudinal Studies 1983; Gray, et al. 1982; Illinois State Board of Education 1985; Irvine 1982; Lazar and Darlington 1982; Schweinhart 1985; Stallings and Stipek 1986).

- **Fewer arrests and antisocial acts** (Berrueta-Clement, et al. 1985; Consortium for Longitudinal Studies 1983; Featherstone 1986; Irvine 1982; Lazar and Darlington 1982).

- **Better relationships with family members, a higher incidence of volunteer work, and more frequent church attendance** (Berrueta-Clement, et al. 1985; Lazar and Darlington 1982).

While parents' reactions to their children's preschool experience is not a major focus of this report, it is well worth noting that some researchers have compared the attitudes of parents whose children attended preschool with those whose children did not. These researchers found that parents of preschool graduates:

- **Had better attitudes towards their children's schooling** (Illinois State Board of Education 1985; Lazar and Darlington 1982).

- **Had higher expectations for their children's learning and greater satisfaction with their children's achievements** (Consortium for Longitudinal Studies 1983; Featherstone 1986).

- **Contacted teachers more often, even though their children had fewer school problems than children who had not been to preschool** (Featherstone 1986).

Preschool attendance and finishing high school? Staying out of trouble with the law? Attending church! While the relationship between even very good preschool programs and these much later events may seem very tenuous, several of the researchers and reviewers in this area have posited causal models to explain such relationships. The general theme of these models is that good early experiences can set in motion a chain of events that pervades the child's life through high school and beyond, increasing the quality of his/her life experiences along the way. One such model is offered by Berrueta-Clement, et al. (1985), who summarize its workings as follows:

> ...the causal model confirms that preschool education provides poor children with a "head start" both intellectually and socially. It suggests that the initial effect of preschool on intellectual performance generates long-term effects through its intermediate effects on scholastic achievement directly, and on commitment to schooling and scholastic placement, which indirectly affect scholastic achievement. These intermediate effects are important in their own right—increasing subjects' maturity, reducing their need for special education services, enhancing their scholastic achievement, and eventually helping them to stay in school longer. Finally, the effects of preschool have extended beyond school into the adult world as these young people have found more employment and have experienced less involvement in delinquent activities than their no-preschool counterparts. (p. 267)

Effects on Different Student Populations

As noted above, the majority of the preschool education research has been conducted with economically disadvantaged populations. The findings cited previously make clear that these children benefit greatly from preschool educational experiences. We also know that early childhood education is very beneficial for handicapped children (Casto and Mastropieri 1986), and educational literature abounds with stories of the positive effects of the early stimulation and learning opportunities offered to those we regard as gifted and talented.

What about middle class children? A 1985 review effort conducted by the Illinois State Board of Education included data on both low-income and middle class preschoolers. After noting that the youngsters from low-income homes benefitted most from preschool participation, the reviewers stated that preschool may enhance the development and learning of middle class children as well. "There are some initial findings that socioeconomically advantaged children, although generally not considered at risk for educational and social failure, may nevertheless benefit from preschool education." (p. 17) Most investigators seem to agree that more research would be required to determine the effects of preschool experiences in the lives of these children.

Some investigators (Illinois State Board of Education 1985; Consortium for Longitudinal Studies 1983) have sought to determine whether preschool participation affects students differentially based on factors such as IQ, sex, birth order, one- or two-parent family composition, whether the mother works outside the home, etc. Most studies have found no differences, and the few studies which did note some differences did not find significant ones.

Differential Effects of Program Models and Teaching Practices

We have been discussing the effects of preschool experiences in general on the cognitive and noncognitive development of participants. Some investigators have taken this analysis a step further, asking whether some approaches to working with preschool children might be more beneficial than others. Findings are cited below, organized by the kind of inquiries made by various researchers.

The importance of health and social services. Bronson, et al. (1985), the Consortium for Longitudinal Studies (1983), Gray, et al. (1982), and others have found that health and social services for disadvantaged children and their families are an essential component of successful preschool programs. They remind us that the deficits experienced by these children extend beyond those that can be remediated in the classroom, and that these physical and social service needs must be met if educational services are to have significant impact.

Parent education and involvement. Virtually all successful programs have parent education and parent involvement components, and nearly all investigators cite these as critical to program success. Cotton and Green's 1988 review of the parent involvement research revealed the powerful effects of such involvement on children's learning and the

learning of very young children in particular. The early childhood education research underscores the importance of parent participation, including the finding that the more intensively parents are involved, the greater are the cognitive and noncognitive benefits to their children (Bronfenbrenner 1974; Irvine 1982). As Bronson, et al. (1985) summarized,

> Education and support services to parents of young children coupled with early education programs for the children should be recognized as an essential part of high quality elementary school curriculum. Early detection and prevention of learning difficulties is effective, and less expensive in the long run, than remediation. (p. 254)

Programs focusing on language development. McKey, et al. (1985), Chicago Public Schools (1985), Smothergill, et al. (1971), and others have found that disadvantaged children exhibit greater long-term achievement when the preschool programs they attend concentrate on language development activities.

Class size. Most investigators who have examined the discrete effects of different program elements have identified small class size (or, at any rate, a small student-teacher ratio) as vital to quality programs. While different ratios are cited, most researchers seem to agree that the student-teacher ratio should not go above 16:1, and many favor a 10:1 ratio for four-year-olds. A 1985 report by the Chicago Public Schools found that children performed better in a small half-day kindergarten class (16:1) than in an all-day class with a 28:1 ratio.

Like the general class size research (summarized in Robinson and Wittebols, 1986), the early childhood education research indicates that smaller class size benefits children by allowing for more individual attention and making possible teaching practices which are not feasible in larger groups.

Program continuity. Efforts made to increase program continuity also increase program effectiveness (Chicago Public Schools 1985; Irvine, et al. 1980; Illinois State Board of Education 1985; McKey, et al. 1985, Gray, et al. 1982). Careful sequencing of materials and activities, based on knowledge of early child development, is a key factor in program success. Investigators have also noted improvements in student outcomes when preschool, kindergarten, and first grade teachers work together to insure program continuity from year to year. As Irvine, et al. (1980) state, "If there is a concerted effort to build on the Pre K experience as the children progress through kindergarten and first grade, the positive effects of Pre K can be maintained." (p. 7)

Inservice for teachers. The general research on the effects of teacher inservice tells us that professional development for teachers pays off in terms of improved student outcomes. Irvine, et al. (1980), Chicago Public Schools (1985) and others have identified benefits when inservice for early childhood specialists focuses directly on early child development, ways to achieve program continuity, and ways to involve and work with parents.

Different curriculum models. Should young children receive instruction in school-related skills in the spirit of fostering familiarity with academic activities, or should attention to academic skill building be left for later in their school experience? Should they select most of their own activities or should these be teacher selected and directed?

This matter of the relative merits of different program models is probably the most controversial issue in the early childhood education field. Considerable research effort has been put forth to determine whether young children benefit more from programmed learning programs (such as Distar), open framework programs (such as High/Scope), child-centered programs (a traditional nursery school approach), or some other program model.

Some researchers have compared different preschool program approaches and found one or another of them to be superior to others. For example, Huston-Stein, et al. (1977) found that less-structured programs with more child-selected activities to be more beneficial than other approaches in fostering imagination, task persistence, and independence. Other investigators have found, not surprisingly, that more didactic, academically oriented programs produce greater short-term

cognitive gains than other models (Schweinhart, et al. 1986; Gersten 1986; Huston-Stein, et al. 1977). On the other hand, Schweinhart, et al. (1986) found that teenagers who had participated in didactic programs as small children engaged in far more negative social behavior when they grew older.

While these findings need to be considered, a more frequently drawn conclusion of the comparative research is that all of these approaches can be effective if they include the previously cited elements which seem critical to program success. Some researchers (Powell 1986; Miller and Dyer 1975) have identified differential effects of program models based on subject area and sex of participant, but most investigators have determined that the major preschool curriculum models can all confer cognitive and noncognitive benefits if they provide inservice for teachers and aides, involve parents, keep to small class size, and maintain program continuity. At the conclusion of their investigations of different approaches, Lazar and Darlington (1982) state:

> The results indicate that high quality programs with careful design and supervision, using a variety of strategies, can be effective, and that these various strategies can be effective for different types of low-income children. This gives program planners the flexibility to be responsive to local needs and parental inputs in designing programs which build on strengths and abilities of the families they serve. (p. 65)

Half-Day Versus Full-Day Kindergarten. What about the half-day/full-day kindergarten issue? Full-day kindergarten programs were originally developed to increase the school readiness of disadvantaged children, thus improving their chances for success throughout their school years. But do full-day programs actually achieve this goal?

Most researchers have found that disadvantaged children do reap greater short-term benefits from full-day programs than from traditional half-day kindergarten (Chicago Public Schools 1985; Herman 1984; Nieman and Gastright 1981; Karweit 1988). Findings are less conclusive regarding long-term benefits, although the evidence suggests that full-day kindergarten graduates experience many of the same benefits as those who attend preschool. Indeed, Neiman and Gastright found that disadvantaged children who attend preschool *and* full-day kindergarten outperformed their counterparts who did not attend preschool and attended only half-day kindergarten.

Congruence Between the Early Childhood Education Research and the Effective Schooling Research

The findings regarding effective practices in early childhood programs are congruent with those effective schooling research findings that have relevance for young children. Both bodies of literature identify the following as critical components of effective schooling:

- Matching instructional resources and teaching activities to the developmental levels of the children
- Holding high expectations for all children and taking steps to insure that they will be prepared for success at their next level of education
- Making sure that activities flow from previous activities and learnings and into future ones; explaining these connections to the children as part of the activity
- Previewing lessons, giving clear directions, and checking student understanding
- Allowing children plenty of opportunity for guided and independent practice with new concepts and skills
- Monitoring student activities and providing help as needed
- Communicating warmth and caring to children
- Building good continuity across grade levels and making sure teachers know where their curriculum fits into the overall school curriculum

- Allocating and making use of time in ways that meet program goals
- Providing staff development opportunities with an emphasis upon skill building
- Engaging the involvement of parents, providing them an array of involvement opportunities, and building teachers' capacity to work effectively with parents

Well-designed educational programs for young, economically disadvantaged children can clearly affect their lives for the better, both during their school years and beyond. These programs also enhance the development of other children, particularly the handicapped. Economic analyses indicate that providing such programs is an excellent investment in the future of our society (Barnett and Escobar, 1987). All that is required is the willingness to take action, as noted by the Consortium for Longitudinal Studies in its 1983 report:

> Perhaps, if we are sufficiently insistent, our society will one day be willing to make long-range investments in our children and in the quest for ways to improve their ability to succeed in life. (p. 466)

Key References

Barnett, W.S., and Escobar, C.M. "The Economics of Early Intervention: A Review." *Review of Educational Research* 57(1987): 387-414.

Reviews the empirical evidence regarding the cost-benefit relationship of early childhood education. Identifies the structure, participants, and student outcomes of a variety of preschool programs. The economic benefits of early childhood programs have not been extensively nor rigorously studied, but a few studies do provide strong evidence that early intervention for disadvantaged children can be a sound economic investment

Berrueta-Clement, J.R.; Barnett, W.S.; and Weikart, D.P. "Changed Lives—The Effects of the Perry Preschool Program on Youths Through Age 19." In *Education Studies Review Annual*, Volume 10, edited by L.H. Aiken and B.H. Kehrer. Beverly Hills, CA: SAGE Publications, 1985, 257-279.

Presents findings from the large-scale longitudinal study of the effects of the Perry Preschool Program in Ypsilanti, Michigan. Reports findings in many school-related and nonschool areas and concludes that the program has been extremely effective in improving participants' life experiences. Includes an economic analysis of the program.

Bronfenbrenner, U. *A Report on Longitudinal Evaluations of Preschool Programs, Vol. II: Is Early Intervention Effective?* Washington, D.C.: Office of Child Development, DHEW, 1974. (ED 093 501)

Reviews twelve studies on the effects of early intervention with children ranging in age from one to six. Children were found to show cognitive gains, but these declined progressively after program completion. The children from the most deprived backgrounds showed the smallest gains. Home intervention appeared crucial to program success for very young children.

Bronson, M.B.; Pierson, D.E.; and Tivnan, T. "The Effects of Early Education on Children's Competence in Elementary School." In *Evaluation Studies Review Annual*, Vol. 10, edited by L.H. Aiken and B.H. Kehrer. Beverly Hills, CA: SAGE Publications, 1985, 243-256.

Investigates the effects of the Brookline Early Education Project (BEEP) on the classroom behavior of a socioeconomically heterogeneous population of children. Experimental children outperformed controls on observational measures of mastery skills, social skills, and use of time.

Casto, G., and Mastropieri, M.A. "The Efficacy of Early Intervention Programs: A Meta-Analysis." *Exceptional Children* 52(1986): 417-424.

Reviews 74 research studies which have investigated the effectiveness of early intervention with handicapped preschoolers. Such intervention was found to be extremely beneficial; and longer, more intensive programs were found to be most benefical.

Chicago Public Schools. *Meeting the National Mandate: Chicago's Government Funded Kindergarten Programs.* Chicago, IL: Chicago Public Schools, 1985.

Reports findings from an evaluation of 110 kindergarten programs in the Chicago Public Schools during 1983-84. Most participants were disadvantaged black children. The report discusses the effects of class size; compares full- and half-day programs; and discusses inservice, parent involvement, time use, teacher perceptions, and student achievement.

Consortium for Longitudinal Studies. *As the Twig is Bent...Lasting Effects of Preschool Programs.* Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers, 1983.

Investigates the long-term effects of participation in a variety of preschool programs. Effects of individual programs are accompanied by an analysis across a dozen different preschool program studies. Preschool was found to produce lasting cognitive and affective benefits.

Cotton, K., and Green, K.R. *Parent Involvement in Education.* Portland, OR: Northwest Regional Educational Laboratory, 1988 (draft).

Reviews research on the effects of parent involvement on the cognitive and noncognitive development of students of various ages and socioeconomic backgrounds. Concludes that parent involvement is extremely beneficial and the more extensively parents are involved, the more positive are the effects on students and families.

Featherstone, H. "Preschool: It Does Make a Difference." *Principal* 65(1986): 16-17.

Reviews several recent studies which focused on the short- and long-term effects of preschool participation on cognitive and social outcomes. While corroborating the findings of previous research about IQ and achievement test scores (preschool boosts these scores only temporarily), recent researchers have identified an array of cognitive and social benefits produced by preschool participation. Benefical effects on parents are also noted.

Gersten, R. "Response to 'Consequences of Three Preschool Curriculum Models through Age 15.'" *Early Childhood Research Quarterly* 1(1986): 293-302.

Critiques the methods used in a recent longitudinal study of preschool effects and the conclusions drawn by the authors of that study. The previous study, which indicated that Distar preschoolers had more social problems later in life than other students, is criticized in this article on grounds of small sample size, misleading criteria for statistical significance, the extensive use of self-reports, etc.

Gray, S.W.; Ramsey, B.K.; and Klaus, R.A. *From 3 to 20: The Early Training Project.* Baltimore, MD: University Park Press, 1982.

Describes the project and offers findings from a study of its long-term effects. The project served low-income children and was designed to enhance perceptual/cognitive and language development through the use of carefully sequenced materials and activities. Project children outperformed controls on intellectual performance through grade four and surpassed them on measures such as special education referrals and retentions.

Herman, B.E. *The Case for the All-Day Kindergarten.* PDK Fastback 205. Bloomington, IN: Phi Delta Kappa Educational Foundation, 1984.

Presents the issues surrounding the all-day versus half-day kindergarten controversy and cites research comparing the two approaches. Describes in detail one all-day program, discusses typical learning and emotional problems encountered in the all-day setting, and provides a checklist for establishing an all-day program.

Huston-Stein, A.; Friedrich-Cofer, L.; and Susman, E.J. "The Relation of Classroom Structure to Social Behavior, Imaginative Play, and Self-Regulation of Economically Disadvantaged Children." *Child Development* 48(1977): 908-916.

Compares the effects produced when preschool children are in highly structured, adult-directed classes as opposed to those produced by less structured classes with more child selected activities. Children in 13 urban Head Start classes participated. Children in low-structure classes engaged in more prosocial behavior with peers, more imaginative play, more aggressive behavior, and more independent task persistence. High-structure children were more attentive and obedient.

Illinois State Board of Education. *Effectiveness of Early Childhood Education Programs: A Review of Research.* Springfield, IL: Department of Planning, Research, and Evaluation, 1985. (ED 260 825)

Reviews research and evaluation studies of early childhood programs. Participants in preschool programs had higher IQs and achievement levels than nonparticipants, and some of these beneficial effects persisted into the teenage years. Participants also outshone their counterparts on noncognitive measures.

Irvine, D.J. *Evaluation of the New York State Experimental Prekindergarten Program.* Albany, NY: New York State Department of Education, 1982. (ED 217 980)

Reports the results of a longitudinal study of the effects of an experimental prekindergarten program on the cognitive and noncognitive development of participating children. Also reports the results of a substudy of the effectiveness of providing staff development to enhance program continuity.

Irvine, D.; Flint, D.; Hick, T.L.; Horan, M.D.; and Kukuk, S.E. *Continuity of Learning Experiences: A Key to Long-Range Effects of Prekindergarten.* Albany, NY: New York State Education Department, 1980.

Investigates the effects of increased continuity in early childhood education on the general reasoning ability and knowledge of verbal concepts of program children. Staff in seven districts received training designed to increase continuity among the school's preschool, kindergarten and first grade programs. Experimental children outperformed controls.

Karweit, N. *Effective Elementary Programs and Practices for At-Risk Students.* Baltimore, MD: Center for Research on Elementary and Middle Schools, Johns Hopkins University, 1988.

Discusses research on programs and practices for preschool, kindergarten and elementary level children and looks at the implications of research findings for program development for disadvantaged children.

Lazar, I., and Darlington, R. *Lasting Effects of Early Education: A Report from the Consortium for Longitudinal Studies.* Monographs of the Society for Research in Child Development, Serial No. 19?, Vol. 47, Nos. 2-3, 1982.

Investigates the long-term effects of early childhood education on disadvantaged children. Twelve investigators, who had designed and conducted programs in the 1960s, pooled their

original data and conducted a collaborative follow-up of the original subjects, then ages 9-19. Descriptions of each program, evaluation results, and overall effects are included.

McKey, R.H.; Condelli, L.; Ganson, H.; Barrett, B.J.; McConkey, C.; and Planz, M.C. *The Impact of Head Start on Children, Families, and Communities.* Final Report of the Head Start Evaluation, Synthesis and Utilization Project. Washington, DC: CSR, Inc., 1985. (ED 263 984)

Applies the statistical techniques of meta-analysis and other methodologies to virtually all existing published and unpublished Head Start research. Corroborates previous research on preschool programs regarding declining achievement benefits, but notes that former Head Starters are less likely to repeat grades or to be placed in special classes than non-Head Starters. Presents extensive information regarding the impact of Head Start on children's health, on families, and on communities.

Miller, L.B., and Dyer, J.L. *Four Preschool Programs: Their Dimensions and Effects.* Monographs of the Society for Research in Child Development, Serial No. 162, Vol. 40, Nos. 5-6, 1975.

Reports results from an experimental comparison of four prekindergarten programs and a three-year follow-up through second grade. Programs included: Montessori, Traditional (enrichment), Bereiter-Engelemann, and Darcee. All programs produced IQ and achievement gains, but these did not persist over time. Noncognitive effects detectable after four years were in the areas of motivation and attitudes.

Nieman, R.H., and Gastright, J.F. "The Long-Term Effects of Title I Preschool and All-Day Kindergarten." *Phi Delta Kappan* 63(1981): 184-185.

Compares the fourth and eighth grade school performance of children who had attended both preschool and all-day kindergarten with the performance of those who did not attend preschool and attended kindergarten only half-days. The preschool/all-day kindergarten group scored higher in both math and reading at both the fourth and eighth grade levels. They also repeated fewer grades and experienced fewer referrals to special classes.

Northwest Regional Educational Laboratory. *Effective Schooling Practices: A Research Synthesis.* Portland, OR: NWREL, 1984.

Presents, in list form, the classroom, school, and district characteristics which research has found to be positively related to student achievement and behavioral outcomes. Draws from nearly 300 primary and secondary sources.

Powell, D.R. "Effects of Program Models and Teaching Practices." *Young Children* 41(1986): 60-67.

Reviews findings of selected studies on the effects of different types of preschool programs and teaching practices on children's later academic and social behavior. Study findings do not permit firm, general conclusions about the relative effectiveness of different approaches, but there are indications of patterns and of directions for further research.

Puleo, V.T. "A Review and Critique of Research on Full-Day Kindergarten." The *Elementary School Journal* 88(1988): 427-439.

Identifies the many methodological flaws and other limitations of the full-day/half-day kindergarten research and cites findings emerging from this research. Full-day kindergarten was found to produce greater short-term and long-term gains, especially for disadvantaged children. Reducing class size was more effective than extending the kindergarten day. No differences were noted for noncognitive outcomes.

Schweinhart, L.J. *The Preschool Challenge.* High/Scope Early Childhood Policy Papers, No. 4. Ypsilanti, MI: High/Scope Educational Research Foundation, 1985.

Discusses the high percentage of preschool-age children who are living in poverty and the likelihood that these children will remain poor all their lives without intervention. Reviews research on the effectiveness of early childhood programs in combatting the negative academic and social consequences of poverty.

Schweinhart, L.J.; Weikart, D.P.; and Larner, M.B. "Consequences of Three Preschool Curriculum Models Through Age 15." *Early Childhood Research Quarterly* (1986): 15-45.

Compares the effects of three preschool curricula—the High/Scope model, the Distar model, and a traditional nursery school model—on various factors in the lives of previous participants at the age of 15. Programs were roughly equal in producing IQ and achievement gains. Social and behavioral outcomes greatly favored High/Scope and traditional nursery school over Distar.

Smothergill, N.L.; Olson, F.; and Moore, S.G. "The Effects of Manipulation of Teacher Communication Style in the Preschool." *Child Development* 42(1971): 1229-1239.

Compares the effects of two teaching styles on the classroom behavior of 12 preschoolers. Half experienced an elaborative style in which teachers gave elaborate task information and encouraged children's comments and involvement, while the other half were given only necessary task information and no encouragement. The elaborative group outperformed their peers on verbal tasks; no differences were noted in nonverbal tasks.

Stallings, J.A.; and Stipek, D. "Research on Early Childhood and Elementary School Teaching Programs." *In Handbook of Research on Teaching.* Third Ed. Edited by M.C. Wittrock. New York: Macmillan Publishing Co., 1986.

Reviews several large-scale longitudinal studies on the cognitive and affective outcomes of preschool programs. Programs utilizing different models and teaching strategies were found to be effective, with their participants significantly outperforming controls on measures of IQ, achievement, dropout rates, retention, referrals to special classes, teen pregnancies, employment, arrests, etc. The chapter also reviews elementary level programs and examines in detail the techniques of mastery learning and cooperative learning.

Other References

Brown, B. "Head Start: How Research Changed Public Policy." *Young Children* 40(1985): 9-13.

Traces the history of research conducted on the effects of Head Start programs and the way research results—and interpretations of them—have influenced Head Start policy and funding.

Cheever, D.S., Jr., and Ryder, A.E. "Quality: The Key to Successful Programs." *Principal* 6(1986): 18-21.

Discusses the benefits to individuals and to society of early childhood education programs, and identifies components of high-quality programs. Provides an overview of some of the research on the cognitive, affective, and economic outcomes of preschool programs.

Council of Chief State School Officers. *A Guide for State Action: Early Childhood and Family Education.* Washington, DC: CESSO, November 1988.

Describes current early childhood needs and provisions in various states and in the nation as a whole and offers recommendations for the establishment of programs for young children and their families.

Cowles, M. "Early Childhood Curriculum." *Acting on What We Know: Developing Effective Programs for Young Children*, edited by K.J. Swick, and K. Castle. Little Rock, AK: Southern Association on Children Under Six, 1985. (ED 262 865)

Identifies the beneficial effects of high-quality early childhood education programs and specifies the components of effective programs.

Day, B.D. "What's Happening in Early Childhood Programs Across the United States." In C. Warger (ed.) *A Resource Guide to Public School Early Childhood Programs*. Alexandria, VA: Association for Supervision and Curriculum Development, 1988.

Identifies trends in early childhood education programming and includes data on state initiatives regarding preschool programs.

Elkind, D. "Educating the Very Young: A Call for Clear Thinking." *NEA Today* 6(1988): 22-27.

Discusses the role of early childhood education in society, presents evidence regarding the appropriate instructional content of preschool programs, examines the role of early childhood education in the experience of disadvantaged children, reviews program models, and discusses the role of the public schools in providing preschool programs.

Glazer, J. "Kindergarten and Early Education: Issues and Problems." *Childhood Education* 62(1985): 13-18.

Reviews research on the effects of preschool and kindergarten, offers recommendations, and suggests areas for further research to clarify areas where research findings are inconclusive.

Katz, L.G. *Current Issues in Early Childhood Education*. Champaign, IL: ERIC Clearinghouse on Early Childhood Education, 1987. (ED 281 908)

Examines issues raised in recent early childhood education research and other literature. Confirms the effectiveness of early childhood programs in general and discusses controversies such as the advisability of schooling for four-year-olds and the most effective preschool and kindergarten models.

Meisels, S.J. "The Efficacy of Early Intervention: Why Are We Still Asking This Question?" *Topics in Early Childhood Special Education* 5(1985): 1-11.

Speculates that uncertainty about the efficacy of early intervention comes from a lack of clarity regarding four basic assumptions of intervention programs: (1) theory of human development, (2) specific interventions, (3) how change is measured, and (4) procedures for selecting participants.

National Association for the Education of Young Children. *Good Teaching Practices for 4- and 5-Year-Olds*. Washington, DC: NAEYC, 1986.

Describes appropriate and inappropriate practices used with children in preschool settings. Includes a bibliography organized by developmental category.

NASBE Task Force on Early Childhood Education. *Right from the Start: The Report of the NASBE Task Force on Early Childhood Education*. Alexandria, VA: National Association of State Boards of Education, 1988.

Recommends that early childhood units be established in elementary schools and that public schools develop partnerships with other ECE programs and community agencies.

National Black Child Development Institute. *Safeguards: Guidelines for Establishing Programs for Four-Year-Olds in the Public Schools*. Washington, DC: The National Black Child Development Institute, 1987.

Identifies and elaborates on ten preconditions for effective public school preschool education, particularly for black children.

Robinson, G.E., and Wittebols, J.H. *Class Size Research: A Related Cluster Analysis. ERS Research Brief.* Arlington, VA: Educational Research Service, Inc., 1986.

Summarizes 100 research studies conducted between 1950 and 1985 and uses a clustering approach to group and regroup the studies into 18 major areas of concern. Conclusions are offered for each of the 18 areas.

Schweinhart, L.J. *Early Childhood Development Programs in the Eighties: The National Picture.* Ypsilanti, MI: High/Scope Early Childhood Policy Papers, No. 1, 1985. (ED 262 902)

Reports on the status of early childhood care and education in the U.S. in the 1980s, with a special focus on federally funded programs. A discussion of preprimary populations and program enrollment is followed by a discussion of federal and state ECE programs.

Schweinhart, L.J., and Weikart, D.P. "Evidence that Good Early Childhood Programs Work." *Phi Delta Kappan* 66(1985): 545-551.

Reports the findings of seven longitudinal studies on the effects of preschool programs on the later cognitive and noncognitive performance of graduates aged 9-21. Findings include that graduates experience improved intellectual performance during early childhood, better scholastic placement and achievement in elementary school, and a lower rate of delinquency and higher rates of high school graduation and employment by age 19.

Schweinhart, L.J. *When the Buck Stops Here: What it Takes to Run Good Early Childhood Programs.* Presentation at the Annual Conference of the National Association of State Boards of Education, 1987.

Identifies critical components in high-quality early childhood education programs and provides guildelines for achieving these. Includes a questionnaire for users to determine program quality.

Schweinhart, L.J.; Berrueta-Clement, J.R.; Barrett, W.S.; Epstein, A.S.; and Weikart, D.P. "The Promise of Early Childhood Education." *Phi Delta Kappan* 66(1985): 548-553.

Reviews findings from the Perry Preschool Project Study in Ypsilanti, Michigan and looks at the implications of these findings for early childhood education in general.

Spencer, M., and Baskin, L. *Microcomputers in Early Childhood Education.* Urbana, IL: ERIC Clearinghouse on Elementary and Early Childhood Education, 1983. (ED 227 967)

Presents concepts and offers discussions of topics related to computers and young children, including effects of computer use, computer literacy, CAI, programming, computer art, word processing, and administrative uses.

Verzaro-Lawrence, M. "Early Childhood Education: Issues for a New Decade." *Childhood Education* 57(2): 104-109.

Reviews research from the seventies on the effects of early childhood education programs and identifies future issues of concern to program planners, researchers, and funding agencies.

Zigler, E.F. "Should Four-Year-Olds Be In School?" *Principal* 65(1986): 10-13.

Discusses various aspects of the preschool education issue—beneficial, neutral or harmful; compulsory or elective; formal education or day care. Warns against the notion that early childhood education can undo the harm caused by poverty and deprivation. Advocates in-school day care for young children.

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- Developing and disseminating effective educational products and procedures
- Conducting research on educational needs and problems
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